

PROPOSAL FOR DRAFT AMENDMENTS TO REGULATION No. 58

- I. Rear Underrun Protection Devices (RUPDs)
- II. Vehicles with regard to the Installation of an RUPD of an approved type
- III. Vehicles with regard to their Rear Underrun Protection (RUP)

Note: The text reproduced below was prepared by the expert from OICA as a preliminary comment to the proposal from Germany to amend the Regulation No.58 (document GRSG-102-26). The modifications to the current text of the Regulation are marked in **bold** for new characters and ~~strike through~~ for deleted characters.

I. Proposal

Paragraph 1.2., add new items 1.2.4. to 1.2.9., to read:

- "1.2. This Regulation does not apply to:
 - 1.2.1. Tractive units for articulated vehicles;
 - 1.2.2. Trailers specially designed and constructed for the carriage of very long loads of indivisible length, such as timber, steel bars, etc.;
 - 1.2.3. Vehicles where any RUPD is incompatible with their use.
 - 1.2.4. Vehicles with a horizontal distance of less than 1000 mm from the centre of the rearmost axle to the rear extremity of the vehicle."**

COMMENTS FROM OICA

- OICA questions the proposal from Germany in that it displaces some exemptions from item 1.2. of the regulation (scope) into a new annex, then brings them back into the scope section per a reference to the new annex. This could mislead the reader of the regulation as not all the list of exemptions is present in the scope section. In addition the proposed annex introduces new items which are not excluded per the paragraph 1.2., but rather by the title of the annex ("type of vehicles for exemptions"). OICA hence proposes to clarify the wording by listing all the exemptions under item 1.2. of the regulation.
- The value of [750] mm for the rear overhang in the German proposal is also questionable as the current regulation in Germany exempts vehicles with overhang up to 1000 mm (item 1.2.4.).

Paragraph 6.2., amend to read:

- "6.2. An approval number shall be assigned to each type approved. Its first two digits (at present ~~02~~ **03** corresponding to the ~~02~~ **03** series of amendments) shall indicate the series of amendments incorporating the most recent major technical amendments made to the Regulation at the time of issue of the approval. The same Contracting Party may not assign the same number to another type of rear under run protective device."

Paragraph 7.1., amend to read:

- "7.1. The section height of the cross-member ~~must~~ **shall** not be less than 100 mm **for vehicles of category M1, M2, M3, N1, N2, N3G, O1 and O2, and not less than 120 mm for the other categories.** The lateral extremities of the cross-member ~~must~~ **shall** not bend to the rear or have a sharp outer edge; this condition is fulfilled when the lateral extremities of the cross-member are rounded on the outside and have a radius of curvature of not less than 2.5 mm."

COMMENTS FROM OICA

The proposal from Germany proposes an increase of section height for all categories except N3G vehicles. OICA supports such increase, however is reluctant to its application for vehicles where nothing justifies it:

- Category N2: these vehicles are under-represented in the statistics of motorway rear-end accidents. This is logical as they have vocation of running onto secondary and urban roads. In addition, under the industrial point of view, any change in the height of the cross-member requests a full re-design of the beam and should be duly justified.
- Category G: the exemption should not be limited to the N3 off-road vehicles as all the other off-road vehicles face the same constraints of off-road capabilities like e.g. departure angle. The scope extension per Supplement 1 to the 02 Series of amendments (document WP29/2011/107 amended by 155th WP29 session should also be taken into account throughout the full proposal.

Paragraph 7.4.2., amend to read:

"7.4.2. The individual elements of the under run protection, including those outboard of the lift mechanism, where provided, ~~must~~ **shall** have an effective surface area, in each case, of at least 350 cm² **for vehicles of category M1, M2, M3, N1, N2, N3G, O3 and O4, and of at least 420 cm² for the other categories.**

However, ~~in the case of vehicles having a width of less than 2,000 mm and~~ where it is impossible to achieve the above requirement, the effective surface may be reduced, on the condition that the resistance criteria are met, **in the case of:**

- (a) Vehicles having a width of less than or equal 2000 mm, or**
- (b) Vehicles fitted with a platform lift at the rear."**

COMMENTS FROM OICA

As for paragraph 7.1. above, OICA proposes an improved wording of the first sub-paragraph for distinguishing the vehicles of category N2 and the off road vehicles.

The second sub paragraph is aligned on the German proposal, with an attempt to clarify the wording.

Paragraph 15.2., amend to read:

"15.2. An approval number shall be assigned to each type approved. Its first two digits (at present ~~02~~ **03** corresponding to the ~~02~~ **03** series of amendments) shall indicate the series of amendments incorporating the most recent major technical amendments made to the Regulation at the time of issue of the approval. The same Contracting Party may not assign the same number to another vehicle type."

Paragraph 16.1., amend to read:

"16.1. The ground clearance with respect to the underside of the protective device, even when the vehicle is unladen, ~~must~~ **shall** not exceed:

- (a) 450 mm for vehicles with hydropneumatic, hydraulic or pneumatic suspension or a device for automatic levelling according to load, and**
- (b) 550 mm for vehicles [of category M1, M2, M3, N1, N2 and N3G] with a type of suspension other than in (a) above and for the vehicles referred to in item 1.2. of Annex 6**
- (c) for the vehicles where the ground clearance requirements in (a) and (b) above are not compatible with their intended use, 600 mm or the height permitting a departure angle, whichever is the lowest, of:**

- i. 8° for vehicles mentioned in item (a) above;
- ii. 10° for vehicles [mentioned in item (b) above;] ~~of category N2~~
- iii. 15° for off-road vehicles of category M1G, M2G, M3G, N1G, N2G and N3G.

This requirement applies over ~~its~~ the entire width of the vehicle and shall be such that the height above the ground of the points of application of the test forces applied to the device according to Part I of this Regulation and recorded in the type approval communication form (Annex 1, item 7) does not exceed ~~600 mm~~ **the values mentioned in (a), (b) and (c) for the respective vehicle categories added with half the height of the cross member as defined in paragraph 7.1.**

COMMENTS FROM OICA

OICA recommends classifying the vehicles in 3 categories:

1. Vehicles exempted from any RUPD requirements: they are listed in paragraphs 1.2.1. to 1.2.4.
2. Vehicles for which the RUPD requirements should remain unchanged: they are listed in paragraphs 1.1. to 1.3. of Annex 6, in addition to all vehicles with a mechanical suspension, vehicles of category N2 and all off-road vehicles.
3. Vehicles for which the strengthening of the requirements is justified: they are the vehicles equipped with a hydropneumatic, hydraulic or pneumatic suspension or with a device for automatic levelling according to load and some heavy vehicles with rigid suspension.

The vehicles where the ground clearance can remain constant according to the load (item 16.1.(a) above) have the least technical difficulties in requirements strengthening.

Yet OICA is keen to keep the value of 550 mm for vehicles equipped with a mechanical suspension as such technology cannot keep the height constant in all conditions of load (item 16.1.(b)). The value of 100 mm was well accepted for N3 vehicles for taking over the variation of load that can affect the ground clearance in the different situations. This value cannot be simply copy/pasted for lighter vehicles because these vehicles are often used in partially laden conditions and request flexible suspensions for keeping safe driving behavior even in unladen conditions. This implies a wide range of suspension variation hence a necessary ground clearance of 550 mm. In addition, off-road vehicles need to secure their off-road capabilities like e.g. the departure angle.

For the vehicles where the departure angle is an important parameter, the ground clearance should be a function of the rear overhang. The wording proposed in item 16.1.(c) above tries to reflect the proposal from Germany in their new paragraph 16.2.

Some heavy vehicles equipped with a rigid suspension could accept some requirements strengthening to an intermediate value (item 16.1.(d)).

OICA recommends adding a new entry in the communication form of Annex 2 for identifying the vehicles mentioned in item 16.1.(a).

OICA in addition proposes a simplified wording for defining the height of the test force application points.

Paragraph 16.4., amend to read:

- "16.3. The device ~~must~~ **shall** be so fitted that the horizontal distance between the rear of the device and the rear extremity of the vehicle, including any platform lift mechanism, does not exceed 400 mm diminished by the recorded deformation (paragraph 7.3 of Part I) measured at any of the points where the test forces have been applied (Annex 1, item 8) during the type approval of the rear under run protective device in conformity with the

provisions of Part I of this Regulation and recorded in the type approval communication form. In measuring this distance, any part of the vehicle which is more than 2 m above the ground when the vehicle is unladen shall be excluded."

COMMENTS FROM OICA

OICA is of the opinion that the provisions of this paragraph should not change. It is sometimes necessary for the manufacturer to profit of the 400 mm currently allowed before the deformation.

Paragraph 24.2., amend to read:

"24.2. An approval number shall be assigned to each type approved. Its first two digits (at present ~~02~~ **03** corresponding to the ~~02~~ **03** series of amendments) shall indicate the series of amendments incorporating the most recent major technical amendments made to the Regulation at the time of issue of the approval. The same Contracting Party may not assign the same number to another vehicle type."

Paragraph 25.1., amend to read:

"25.1. The ground clearance with respect to the underside of the protective device, even when the vehicle is unladen, ~~must~~ **shall** not exceed:

- (a) **450 mm for vehicles with hydropneumatic, hydraulic or pneumatic suspension or a device for automatic leveling according to load, and**
- (b) **550 mm for vehicles with another type of suspension than above, vehicles of category M1, M2, M3, N1, N2 and N3G, and for the vehicles referred to in item 1.2. of Annex 6**
- (c) **for the vehicles where the ground clearance requirements in (a) and (b) above are not compatible with their usage, 600 mm or the height permitting a departure angle, whichever is the lowest, of:**
 - i. **8° for vehicles mentioned in item (a) above;**
 - ii. **10° for vehicles of category N2**
 - iii. **15° for off-road vehicles of category M1G, M2G, M3G, N1G, N2G and N3G**

over its entire width".

COMMENTS FROM OICA

OICA recommends an alignment on the amendments to Part II for the regulation.

Paragraph 25.2., amend to read:

"25.2. The RUP ~~must~~ **shall** be situated as close to the rear of the vehicle as possible. **The maximum horizontal distance between the rear of the device and the rear extremity of the vehicle shall not exceed 400 mm.**"

Paragraph 25.4., amend to read:

"25.4. The section height of the RUP ~~must~~ **shall** not be less than 100 mm **for vehicles of category M1, M2, M3, N1, N2, N3G, O1 and O2, and not less than 120 mm for the other categories..**"

Paragraph 25.8.2., amend to read:

"25.8.2. The individual elements of the under run protection, including those outboard of the lift mechanism, where provided, ~~must~~ **shall** have an effective surface area, in each case, of at least 350 cm² **for vehicles of category M1, M2, M3, N1, N2, N3G, O1 and O2, and of at least 420 cm² for the other categories.**

However, ~~in the case of vehicles having a width of less than 2,000 mm and~~ where it is impossible to achieve the above requirement, the effective surface may be reduced on the condition that the resistance criteria are met, **in the case of:**

- (a) **Vehicles having a width of less than or equal 2,000 mm, or**
- (b) **Vehicles fitted with a platform lift at the rear."**

Paragraph 31., amend to read:

"31. Transitional provisions

[31.1. As from the official date of entry into force of the ~~02~~ **03** series of amendments, no Contracting Party applying this Regulation ~~shall~~:

- (a) **shall** refuse to grant approval under Parts I, II and III of this Regulation as amended by the ~~02~~ **03** series of amendments;
- (b) **shall** refuse a type of component or separate technical unit approved under Part I of this Regulation as amended by the ~~02~~ **03** series of amendments;
- (c) **may** prohibit the fitting on a vehicle of a component or separate technical unit approved under Parts I and II of this Regulation as amended by the ~~02~~ **03** series of amendments.

31.2. Until ~~18~~ **24** months after the date of entry into force of this Regulation as amended by the ~~02~~ **03** series of amendments, Contracting Parties applying this Regulation shall:

- (a) not refuse a type of component or separate technical unit approved under Part I of this Regulation as amended by the ~~01~~ **02** series of amendments;
- (b) not refuse to grant approvals to those types of component or separate technical unit which comply with the requirements of Part I of this Regulation as amended by the ~~01~~ **02** series of amendments;
- (c) not refuse to grant extensions of approval for components or separate technical units which comply with Part I of this Regulation as amended by the ~~01~~ **02** series of amendments;
- (d) continue to allow the fitting on a vehicle of a component or separate technical unit approved under Parts I and II of this Regulation as amended by the ~~01~~ **02** series of amendments.

31.3. Starting ~~18~~ **24** months after the date of entry into force of this Regulation as amended by the ~~02~~ **03** series of amendments, Contracting Parties applying this Regulation:

- (a) may refuse a type of component or separate technical unit which does not meet the requirements of Part I of this Regulation as amended by the ~~02~~ **03** series of amendments;*
- (b) shall grant approvals only if the type of component or separate technical unit to be approved meets the requirements of Part I of this Regulation as amended by the ~~02~~ **03** series of amendments;

- (c) ~~may prohibit the fitting of a component or separate technical unit which does not meet the requirements of Parts I and II of this Regulation as amended by the 02 03 series of amendments;~~
- 31.4. Until ~~36~~ **48** months following the date of entry into force of this Regulation as amended by the ~~02~~ **03** series of amendments Contracting Parties applying this Regulation shall:
- (a) continue to grant approvals to those types of vehicles which comply with the requirements of Part III of this Regulation as amended by the ~~01~~ **02** series of amendments;
 - (b) continue to accept national or regional type-approval of a vehicle type-approved under Part III of this Regulation as amended by the ~~01~~ **02** series of amendments.
- 31.5. As from 48 months after the date of entry into force of this Regulation as amended by the ~~02~~ **03** series of amendments, Contracting Parties applying this Regulation:
- (a) **shall** grant approvals only if the vehicle type to be approved meets the requirements of Part III of this Regulation as amended by the ~~02~~ **03** series of amendments;
 - (b) ~~may refuse national or regional type approval and shall refuse first national or regional registration (first entry into service) of a vehicle which does not meet the requirements of Part III of this Regulation as amended by the 02 03 series of amendments.]~~

COMMENTS FROM OICA

The transitional provisions are between brackets as the delays necessary for adapting the production depend on the technical changes required by the amendments.

Any change in the geometry of the RUPD cause a re-design of the rear of the vehicle. In this view, the amendments should apply to new types only (deletion of paragraph 31.5.(b).

Similarly, a new component could not be fitted on a vehicle rear of old design. This is the reason why the application date of paragraph 31.3.(c) should be aligned on the application date of paragraph 31.5.

Annex 2, add a new item 5.1. and a new reference to footnote 2, to read:

“5. Brief description of the vehicle type as regards its dimensions and lines

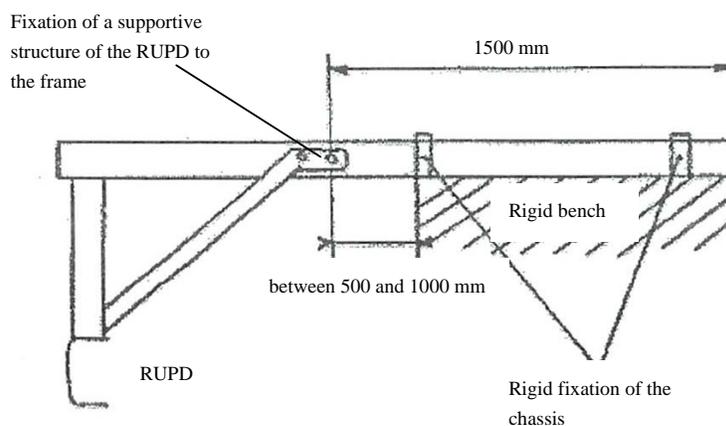
**5.1. Vehicle is equipped with 2/
hydro-pneumatic suspension
hydraulic suspension
pneumatic suspension
automatic levelling system”**

Annex 5,

Paragraph 1.1.3., amend to read:

“1.1.3. On a rigid test bench (see figure 1, representing the minimum requirements to be fulfilled).

Figure 1



COMMENTS FROM OICA

The Figure 1, if not improved, should represent only the minimum requirements to be fulfilled, and this should be mentioned in the text of item 1.1.3. It is considered appropriate that the Technical Services have the necessary information to reproduce the test bench.

Paragraph 3.1., amend to read:

"3.1. The requirements of paragraphs 7.3 and 25.6 of this Regulation shall be verified by means of suitable test mandrels; the forces for tests prescribed in paragraphs 3.1.1 and 3.1.2 below shall be applied separately and consecutively, via a surface not more than 250 mm in height (the exact height **must shall** be indicated by the manufacturer) and 200 mm wide, with a radius of curvature of 5 ± 1 mm at the vertical edges. The height above the ground of the centre of the surface **must shall** be defined by the manufacturer within the lines that bound the device horizontally. When the test is carried out on a vehicle the height **must shall** not, however, exceed ~~600 mm~~ **the heights as specified in paragraph 16.1 of this regulation** when the vehicle is unladen. The order in which the forces are applied may be specified by the manufacturer."

Paragraph 3.1.1., amend to read:

"3.1.1. A horizontal force of 100 kN or 50 per cent of the force generated by the maximum mass of the vehicle, whichever is the lesser, shall be applied consecutively to two points situated symmetrically about the centre line of the device or of the vehicle whichever is applicable at a minimum distance apart of 700 mm and an maximum of 1 m. The exact location of the points of application shall be specified by the manufacturer."

Paragraph 3.1.2., amend to read:

"3.1.2. In the cases defined in paragraphs 1.1.1 and 1.1.2 of this annex a horizontal force of 50 kN or 25 per cent of the force generated by the maximum mass of the vehicle, whichever is the lesser, shall be applied consecutively to two points located 300 ± 25 mm from the longitudinal planes tangential to the outer edges of the wheels on the rear axle and to a third point located on the line joining these two points, in the median vertical plane of the vehicle."

Paragraph 3.1.3., amend to read:

"3.1.3. In the cases defined in paragraph 1.1.3 of this annex a horizontal force of 50 kN or 25 per cent of the force generated by the maximum mass of the vehicle for which the device is intended, whichever is the lesser, shall be applied consecutively to two points located at the discretion of the manufacturer of the rear under run protective device and to a third point located on the line joining these two points, in the median vertical plane of the device."

COMMENTS FROM OICA

The vehicles compliant to the 02 series of amendments to this regulation entered into service during the year 2010. It is unlikely that these vehicles already have an influence on the total fleet, and this may be the reason why there is no updated accidentology in this field. In this view it seems logical that amendments are limited to geometric changes, with no change to the test forces as this challenges the actually introduced vehicle concepts complying with the 02 series of amendments. The proposed changes in the geometry already improve the safety and have an influence on the rigidity because of improved compatibility PC/HCV.

The increase in the performance requirements implies an increase in weight. This may jeopardise the value of 40 daN indicated in paragraph 7.2. of the current text or may force the manufacturer to install a motorised foldable RUPD, causing a new weight increase. This in turn can also jeopardise the necessary environmental protection measures.

Insert a new Annex 6:

“Annex 6

TYPE OF VEHICLES WITH PARTICULAR REQUIREMENTS

1. List of vehicles:

- 1.1. Vehicles fitted with a foldable RUPD;**
- 1.2. Vehicles fitted with a platform lift at the rear;**
- 1.3. Vehicles fitted with a longitudinally adjustable RUPD.”**

COMMENTS FROM OICA

The deletion of the amendments proposed by Germany for paragraph 3.1.4. of Annex 5 (test forces) makes the items 1.1. and 1.3. above not necessary (item 1.2. is mentioned in paragraphs 16.1. and 25.1.). This document however keeps these items for the keeping a reference to the vehicles they are mentioning.

The German proposal puts forward an exemption for “Dump trucks that are equipped with a foldable RUPD” (item 1.2.7.). OICA believes that this exemption should not be limited to dump trucks, but rather extended to all trucks that are equipped with a foldable RUPD.

OICA proposes the table below as a tool for achieving compromise decisions

Vehicle category	Geometry			Test forces			Comments
	Section height	Ground clearance	horizontal distance between the rear of the device and the rear of the vehicle	horizontal force to the P1 points paragraph 3.1.3.	horizontal force to the P2 points paragraph 3.1.2.	Horizontal force to the P3 point Paragraph 3.1.3.	
M1							
M2							
M3							
N1							
N2							
N3							
O1							
O2							
O3							
O4							